

# *World Wide Web*

## *Review Guide for the CRC Examination:*

### *Theories of Vocational Development*

---

Vocational development is the process by which individuals choose a career path or occupation. Many theories approach it largely as a developmental process of youth ... culminating in the choice and actualization of the first career. Individuals continue to develop vocationally throughout their lives, and many have several major careers as personal needs and interests change.

#### **Trait-Factor Theories of Vocational Development**

Trait-Factor Theories of vocational development go as far back as the early writings of Frank Parsons (Choosing Your Vocation, 1909). They hold that individuals need to understand their abilities, aptitudes, interests and skills (*traits*) and match these to the specific requirements and demands (*factors*) of different occupations. The successful matching of individual *traits* with job *factors* is the key to a successful and satisfying vocational choice. **\*\*\*Associate Trait-factor theory with Frank Parsons – this was a test question\*\*\***

---

#### **Contributions from Psychoanalytical Theory**

The psychoanalytic perspective generally views work as an unpleasant activity that requires the *reality* oriented Ego to suppress and control the *pleasure* oriented Id. A highly successful and satisfying career choice will typically involve the Ego employing the defense mechanism of sublimation. For example, individuals might sublimate aggressive tendencies through military, sports, or even surgical careers; exhibitionistic needs through acting; power needs through politics; and voyeurism by becoming a professional counselor where one is able to look into the most intimate corners of peoples' lives. Sublimation is the key to understanding psychologically satisfying career choices.

From the psychoanalytic perspective, Ann Roe postulated that children with cold and rejecting early parent/child relationships would be inclined to choose careers not significantly involving people interactions, and those with warm and accepting early parent/child relationships careers with substantial people interactions. Research has not supported this, but in psychoanalytic theory the defense mechanisms of reaction formation and over compensation explain opposite choices.

---

## Donald Super

The roots of Donald Super's extensive writings on vocational development are in the Self Theory of Carl Rogers. According to Super, when making vocational choices individuals act in relation to their understanding of themselves. Psychologically, career choices are driven by Self-Concepts.

It follows that making satisfying vocational choices requires an accurate understanding of Self. This is achieved through Person-Centered values clarification. Understanding SELF is the key to making a successful vocational choice.

It is also necessary, however, to understand the requirements and work activities of different occupations. If knowledge of any occupation or its demands are inaccurate, that occupation cannot be properly evaluated in relation to one's Self-Concept.

**\*\*\*Associate Donald Super with understanding SELF and “life roles” = Life Rainbow\*\*\***

### **Five Stage Psycho-Social Theory of Vocational Development:**

#### Growth (Birth to 14)

During this period the child is developing physically and psychologically, and is laying the foundation for a self-concept that will be critical to future vocational choices.

#### Exploration (15 to 24)

Here the individual begins to develop an awareness of occupations. In the early or fantasy period of this phase the individual's choices are frequently unrealistic and related to play life. The tentative period comes next and choices are narrowed, but there is still incomplete knowledge of self and the world of work. In the final period of this phase the individual further narrows the list of possible choices to more realistic goals given improved knowledge of self and the world.

#### Establishment (25 to 40)

Here the individual is in actual work situations, experiencing some that fit and others that do not. An occupation is selected that offers the best chance to obtain satisfaction.

#### Maintenance (Middle age to 65)

Here the individual continues in and attempts to improve their situation in a chosen occupation. They try to maximize the satisfying aspects of their work and minimize the unsatisfying aspects.

### Decline (65 and over)

This includes the preretirement phase where the individual's attention is on continuing to meet the minimum requirements of the job rather than on enhancing their position. It culminates in leaving the work force.

Super's writings on vocational development extend far beyond what is presented here. **For the CRC Exam, Donald Super should be associated with the critical importance of accurate self-understanding (Self-Concept) in making successful and satisfying vocational choices.**

---

## **Eli Ginzberg**

Ginzberg's developmental theory of career choice postulates that individuals pass through three major stages before making their first significant vocational choice. He further proposed substages within each of the major stages.

### **Stage Model:**

#### Fantasy (Birth to 11)

Here the child thinks of occupations in relation to their *fantasies* about being an adult. There is no significant consideration of personal abilities or occupational demands.

#### Tentative (11 to 17)

Here in late childhood and adolescence the individual is focused largely on themselves. They evaluate their interests (approximately 11-12), capacities (13-14), and values (15-16).

#### Realistic (17 to 18 and up)

Here the focus is more on available careers and evaluation of the demands and benefits of different careers. It is built upon an understanding of oneself achieved in the previous stage.

**\*\*\*Know these stages and associate with Ginzberg's Developmental Theory of Career Choice – I believe there were 2 questions on these. I believe one was about the “Fantasy” stage and the other “Realistic.”**

---

## **John Holland's Personality-Type Theory**

John Holland's model holds that different *personality types* are best suited to different careers. He proposed six basic personality types and then identified careers they were best suited to enter. Holland's model is a modern trait-factor theory that has been very influential in vocational counseling. It is employed by popular interest inventories such as

the **Self-Directed Search, Vocational Preference Inventory, and Strong Interest Inventory.**

**Personality Types:**

Holland's six personality types are arranged along a hexagonal model with opposite work environments across from one another on the hexagon and more closely related work environments next to one another. The Realistic type contrasts most sharply with the Social type, the Investigative with the Enterprising, and the Conventional with the Artistic.

Realistic	Investigative
Conventional	Artistic
Enterprising	Social

**\*\*\*Associate John Holland with these types and know a little bit about each “type.” There were 3 questions on the specific types (i.e. one answer was realistic relating to working “hands on” with stuff....)\*\*\***

Realistic

These individuals deal best with an environment that is objective and physical. They like stereotypical masculine, outside and hands-on activities. They are most comfortable in work environments dealing with machines, equipment, tools, nature, athletics and crafts. They tend to dislike Social occupations.

Investigative

These individuals deal best with an environment that is intellectual. They enjoy working with ideas, words or symbols. They prefer scientific and theoretical pursuits that can largely be pursued through their individual effort. They tend to dislike Enterprising occupations.

Social

These individuals deal best with an environment that involves working with people in some helping, teaching, or serving capacity. They enjoy social interaction and being around others. They tend to dislike Realistic occupations.

Conventional

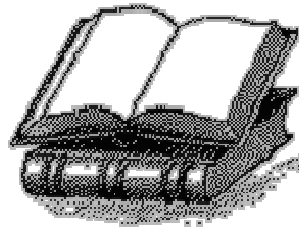
These individuals deal best with an environment that is concrete and predictable. They enjoy structure and routine, and often like office practices and computational work. They tend to dislike Artistic occupations.

### Enterprising

These individuals deal best with an environment that is adventurous, energizing and challenging. They are extroverted and enjoy power, dominance, and persuasive communication. Business and supervisory occupations are chosen, and they tend to dislike Realistic occupations.

### Artistic

These individuals deal best with an environment that allows for creative self-expression. They like music, drama, literature, fine arts, and other self-expressive activities. They tend to dislike Conventional occupations.



### [Return to Areas to Review](#)

Copyright, University of South Florida.

## ***World Wide Web Review Guide for the CRC Examination:***

### ***Personality Theories***

---

The area of personality theories is one of declining influence in the helping professions. Despite their declining influence, it is still necessary to be familiar with the major theories. Personality theories to be familiar with for the CRC Examination include:

## **Psychoanalysis (Sigmund Freud) *Stages of Development:***

Oral Stage (birth to approximately 1 year of age)  
Anal Stage (1-2 years of age)

Phallic Stage (3-5 years of age)  
Oedipus or Electra Complex  
Latency Period (6-12 years of age)  
Genital Stage (from puberty on)

### *Organization of the Psyche:*

Id (Operates on Pleasure Principle)  
Ego (Operates on Reality Principle)  
Superego (Operates on Moral Principle)

### *Freud's Topographical Model:*

Conscious (What you are thinking about.)  
Preconscious (What can be readily brought into consciousness)  
Unconscious (What cannot readily be brought into consciousness.)

### *Defense Mechanisms of the Ego:*

This work was begun by Freud and carried further by his followers. The ego defends itself against internal and external threats with defense mechanisms. Major [defense mechanisms](#) of the ego include:

Repression  
Regression  
Displacement  
Reaction Formation  
Projection  
Rationalization  
Intellectualization  
Denial  
Identification  
Suppression  
Sublimation

---

## Analytical Psychology (Carl Jung)

Carl Jung was heir apparent to Freud until he split with him over the importance Freud placed on sexuality and his own concept of a collective unconscious.

### *Major Constructs:*

Ego  
Personal Unconscious  
Complexes  
Collective Unconscious  
Archetypes  
(Persona, Self, Anima/Animus, Shadow, and many others)

### *Four Functions and Two Attitudes:*

The four functions and two attitudes are combined to form eight types of individuals.  
This is the personality assessment model used by the **Myers-Briggs**.

#### **Functions**

Thinking  
Feeling  
Sensation  
Intuition

#### **Attitudes**

Introversion  
Extraversion

---

## Individual Psychology (Alfred Adler)

Adler was another early follower of Freud who split with him over Freud's emphasis on sexuality and his own beliefs about the importance of striving for success and perfection.

### *Major Concepts:*

Life-Style  
Striving for Perfection  
Social Interest  
Empathy  
Inferiority and Superiority Complexes  
Importance of Birth Order in Personality Development

---

## Erik Erikson

Erik Erikson was trained as a lay psychoanalyst, and his contribution to personality theory was the *epigenetic principle*. This principle states that human development progresses in sequential stages, and that each stage must be satisfactorily resolved for development to proceed unimpaired to the next. If problems occur at any stage, they will influence and affect development that follows. Erikson's eight stages stretch across the life span, and unlike Freud, who believed everything critical in human development occurred in childhood, Erikson held that significant developmental challenges existed throughout the life cycle.

### *Stages of Development:*

Basic Trust versus Basic Mistrust (0 - 1 years)  
Autonomy versus Shame and Doubt (1 - 3 years)  
Initiative versus Guilt (3 - 5 years)  
Industry versus Inferiority (6 - 11 years)  
Identity versus Role Diffusion (11 - Adolescence)  
Intimacy versus Isolation (21 - 40)  
Generativity versus Stagnation (40 - 65 years)  
Integrity versus Despair (65 until Death)

---

## Other Psychoanalytically Oriented Writers

**Karen Horney:** Social and Cultural Psychoanalysis

**Erich Fromm:** Humanistic Psychoanalysis

---

## Trait Approaches to Personality

These approaches seek to develop a taxonomy of personality traits with this taxonomy considered to be an adequate explanation of personality. The area is tied closely to personality inventories and personality assessment. It was very different from psychoanalytical approaches in the emphasis placed on empirical research. Today there is a general consensus on five major traits that are relatively stable throughout life: (1) Neuroticism, (2) Extraversion, (3) Openness, (4) Agreeableness, and (5) Conscientiousness. Early writers in this area were:

**Gordon Allport:** Trait Theory

**Hans Eysenck:** Three-Factor Theory

**Raymond Cattell:** Factor-Analytic Approach



---

# Cognitive Perspectives

**George Kelley:** Theory of Personal Constructs

The major writer in this area was George Kelley. He assumed that the development of every individual's personality centered on their attempt to maximize their understanding of the world and themselves through a constantly evolving system of personal constructs.

These ideas are highly personal and are based upon interpretations of events. Some interpretations are better supported by evidence than others, and some lead to successful and others unsuccessful behaviors. The concepts of "constructional alternativism" underlies his model. It basically means that we are always able to reinterpret our representation of events.

---

# Humanistic and Existential Perspectives

This area is sometimes called the Third Force movement in contemporary psychology, the other two being the psychoanalytic and behavioral approaches. This area emphasizes highly personal growth leading to realization or actualization as a unique, fully functioning individual. This good result assumes, however, that conditions guiding development are right. The humanistic/existential approach emphasizes the importance of personal values and meanings in the development of each person as a distinct and self-defined individual. Major writers in the area are:

**Abraham Maslow:** Importance of Self-Actualization

**Carl Rogers:** Self-Theory (Person-Centered Therapy)

**Rollo May:** Existential Analysis

---

# Learning Theories

There are three major learning theories: (1) Classical Conditioning (also known as Respondent Conditioning and Associative Learning) which was first described by Ivan Pavlov, (2) Operant Conditioning (which is also known as Stimulus-Response or Operant Learning) which is perhaps best reflected in the writings of B. F. Skinner, and (3) Social Learning (social modeling) perhaps best reflected in the writings of Albert Bandura.

**\*Know the differences between Classical Conditioning & Operant Learning – main difference being that operant learning comes about with a reinforcement to increase frequency of the behavior and classical conditioning does not)**

## Classical Conditioning

Here, at the beginning, an Unconditioned Stimulus elicits an Unconditioned Response. In Pavlov's classic study the presentation of the food is the Unconditioned Stimulus and salivation the Unconditioned Response. Once another stimulus (Conditioned Stimulus) becomes associated with the Unconditioned Stimulus it will have some ability to elicit the Response. We then say we have a Conditioned Stimulus (bell ringing) eliciting a Conditioned Response (salivation). *Classical Conditioning* is also known as *Associative Learning*. There are some [behavioral concepts](#) overlapping the areas that it may be helpful to be familiar with on the CRC exam.

## Operant Learning (Stimulus-Response Theory)

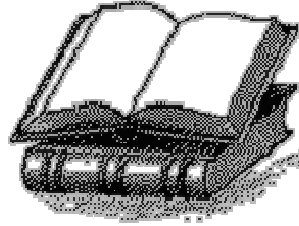
Here the consequences of behavior determine whether that behavior will increase, decrease, or remain constant in frequency. If a behavior results in a pleasant stimulus (consequence) coming to the behaving organism the behavior is positively reinforced and will increase in frequency. If the behavior results in an unpleasant stimulus being removed from the organism the behavior is negatively reinforced and is more likely occur the next time the unpleasant stimulus is present (because the behavior was effective in removing the unpleasant stimulus). An all too frequent misconception is that negative reinforcement is punishment. The word *negative* refers to the removal of an undesired, unpleasant, problematic, *negative* stimulus (such as pain) and when this occurs we have negative reinforcement.

Punishment and reduces the frequency of behavior, especially when the stimulus administering the punishment (usually a person) is present. There are two types of punishment: (1) presentation of an aversive stimulus (e.g., a spanking, verbal scolding), and (2) withdrawal of a positive stimulus (e.g., taking away a favorite toy, turning off the TV).

## Social Learning

Human Beings have all five senses common to the animal world. We may not be able to smell or hear as well as our dogs, or see as well as owls or eagles, but we can observe interactions with organisms and their environments (including interactions between people). We learn from these observations because we are intelligent ... and do not need to experience consequences directly or personally. This is sometimes called vicarious learning or learning by observation, and it is how a great deal of human learning is believed to occur.

---



[Return to Areas to Review](#)

Copyright, University of South Florida.

## ***Review: Basic Statistical Concepts***

---

### Number Scales

**Nominal:** When numbers are simply names as in Group 1 and Group 2. No math can be performed with nominal numbers. The Groups could have been named A & B.

**\*\*\*The one was on the test (nominal). It gives you an example and there are no numbers, only words, so you know it has to be “nominal.”\*\*\***

**Ordinal:** Numbers that show relative standing in a distribution. The distance between numbers (ranks) is not necessarily equal. As an example, the tennis players ranked #1 and #2 may be very close in their skills, and far ahead of the player ranked #3. Percentile ranks are ordinal numbers. The absolute distance between the 60th and 61st percentiles is greater than the absolute distance between the 90th and 91st percentiles. *Nonparametric* statistics are typically used with ordinal scale numbers where the median is used as the measure of central tendency.

**Interval:** Numbers that have equal distance between units (2 is half of 4 ... 500 half of 1,000). We assume that the measures obtained on standardized tests are interval scale numbers or at least closely approximate the interval scale. Statistical procedures with interval scale numbers are called *Parametric* and use the mean as the measure of central tendency.

**Ratio:** Numbers with a true 0 and equal distance between units (as in interval numbers). As we measure constructs of human creation in the social and behavioral sciences (e.g., intelligence, anxiety, depression, aptitudes) we do not have true ratio scale numbers. There is no such thing, for example, as zero intelligence. There is only comparatively more or less of this *construct*.

---

## Measures of Central Tendency

**Mean:** Arithmetic average of a distribution (group of numbers). Generally the best central tendency measure for interval scale numbers.

**Median:** 50th percentile or midpoint of any distribution. In the first distribution within parentheses the median is 6 (2, 4, 6, 6, 8, 9) and in the second 6.5 (2, 4, 6, 7, 8, 9). Generally the best central tendency measure for ordinal scale numbers.

**Mode:** Most frequently appearing number in a distribution. In the first distribution above the mode is 6. The second distribution does not have a mode. The following distribution has two modes, and is called a bimodal distribution (3, 4, 4, 5, 8, 9, 9, 10).

**\*\*I believe there was a question about these on the test...maybe more than one?"**

---

## Measures of Dispersion

**Range:** The *Inclusive Range* is the highest score minus the lowest score in a distribution plus 1. If the highest score on an examination is 97 and the lowest score 65, the range is 33. The plus 1 correction captures the values from 97.49 to 64.50. The *Exclusive Range* is just the highest score minus the lowest score. In the above example 32.

**Variance:** Conceptually the average of the squared deviation scores from the mean of the distribution ... divided by the number of observations (N). When estimating the variance of a population from a very small sample we divide by N-1 because very small samples tend to underestimate the variance of the larger population they are drawn from. The N-1 correction obviously becomes less important and even irrelevant as sample size increases.

**Standard Deviation:** Square root of the variance. If the variance of a distribution is 25, the standard deviation is 5.

**\*Know standard deviation and that it is a measure of variance – that is on the test.\***

---

## Scores

**Raw Score:** The number of actual points a person scores on a test or one of its scales. Because tests and even scales within the same test have different numbers of items, it is very difficult to compare raw scores. Raw scores mean nothing unless you also know the mean and standard deviation of the distribution they come from.

**Standard Scores:** A converted score (formerly a raw score) where the mean and standard deviation of a distribution have been set at certain values, and scores are expressed along that scale.

**\*Know raw/standard score – there was a question about this.**

**Z-Scores:** A standard score where the mean of the distribution is set at 0 and standard deviation at 1. A subject with a z-score of 2.5 scored 2.5 standard deviations above the mean. Any raw score can be converted to a z-score by first subtracting it from the mean and then dividing by the standard deviation.

**\*Know that Z scores are set at 0 (mean of distribution)\***

**T-Scores:** A standard score where the mean of the distribution is 50 and standard deviation 10. A subject with a T-score of 65 is 1.5 standard deviations above the mean. Many tests convert subject raw scores to T-scores so that scales with different numbers of items can be easily compared, and T-scores are superior to z-scores in that they avoid negative numbers (it is easier to tell a subject they scored 45 than -.5). Z-scores are converted to T-scores by multiplying them by 10 and then adding 50.

**Percentile Ranks:** Test results are often reported as a percentile standing in a distribution. A percentile rank of 85 means that the subject's performance was *equal to or better than* 85% of the people taking the test.

---

## Distributions

**Normal Probability Curve:** This is the famous bell shaped curve that is perfectly symmetrical on both sides. The mean falls directly at the center, and standard deviation bands fall at precisely known percentiles along the curve. This curve is at the very foundation of statistical inference because observations from large data sets tend to approximate it.

**Bimodal Distribution:** This is often called the *camel back* distribution because of its two high points. When it occurs, the data may be reflecting the performances of two different groups. The actual mean of a bimodal distribution falls somewhere between the two high points.

**Skewed Distributions:** The direction of the tail defines whether a distribution is positively or negatively skewed. A positively skewed distribution has its tail extended to the right (toward higher values), and a negatively skewed distribution has its tail going off to the left (toward lower values). When the observations are correct answers on a test, a strong negative skew is said to show a *ceiling effect*. The items were too easy for most of those who took the test, and the test could only discriminate among those with poor performances. The opposite of this is sometimes called a *basement effect*.

---

## Standard Error of Measurement

When a subject takes a test the resulting score they obtain is called the **Observed Score**. It consists of both a "Signal" which is a true and valid reading of what the test is trying to measure, and "Noise or Error". The quantification of the noise or error is the test's **Standard Error of Measurement**. If we could factor out all the noise and error in the observed score, and be left with only a valid signal, that would be the subject's **True Score**.

**\*\*Know definition of standard error of measurement and that basically for every test given, a standard error of measurement (some number/quantification) must be considered and subtracted out. What you have left over is your "true" score or your observed score. That is how I understand it and there was a question on the test to this effect.**

A Standard Error of Measurement (SEM) is a number, reported in the test manual, for each scale on the test and frequently for different groups of subjects. As an example, on the WAIS-R the overall SEM averages across age groups for Verbal, Performance and Full Scale IQs are reported as 2.74, 4.14 and 2.53, respectively. SEMs for the nine different age groups the WAIS-R is normed to are also reported for all three IQs.

SEMs are understood by using the normal probability curve. Instead of dividing the curve with standard deviation bands, we now divide it with SEM bands at the same percentile standings used with whole number standard deviations. *The observed score for the subject is placed at the center of the curve.* There is then approximately a 68% probability that the true score will fall within one SEM of the observed score (from -1 to 1 SEM). There is approximately a 95% probability that the true score falls within two SEMs of the observed score (-2 to 2). These are called the 68% and 95% **Confidence Bands** for the true score.

As examples, the following are 68% and 95% confidence bands for three subjects earning different scores on a test with an SEM of 4.

For subject #1 with an observed score of 50 (46 - 54), (42 - 58)  
For subjects #2 with an observed score of 55 (51 - 59), (47 - 63)  
For subject #3 with an observed score of 42 (38 - 46), (34 - 50)

For those interested, the SEM of a test is calculated by multiplying the standard deviation of the test by the square root of  $1 - r$  (where  $r$  is the test's reliability).

---

## Correlation

Correlations are how we measure the extent of a relationship between two sets of paired numbers. It is how the validity and reliability of tests are reported in their manuals. There are special correlations for dichotomous variables (where only a value of zero or one exists) and for ordinal numbers, but with interval scale numbers the correlation used almost universally is the Pearson Product-Moment Correlation.

### **\*Know Correlation and associate with the Pearson-Product\***

Correlations can range in value from negative one (-1) to positive one (+1). A correlation of -1.0 means a perfect inverse relationship between two sets of data, and a correlation of +1.0 a perfect positive relationship. In a perfect inverse or negative relationship as every score drops in one distribution, every matched score proportionately rises in the other. In a perfect positive relationship the paired numbers move proportionally up or down in a perfectly matched relationship.

Correlation will show an association between two sets of data, but not cause and effect. A correlation of 0.0 means there is no association or relationship between the two groups of paired numbers. Any positive or negative correlation "*technically*" shows some degree of association, but as a general rule of thumb correlations between -.30 and +.30 are not significant (i.e. essentially the same as zero). In relation to criterion validity, tests start to have some minimal degree of predictive power at .40, and reliability correlations should exceed .80.

To obtain a **VERY conservative estimate** of the percent of shared variance between the two sets of data one squares the correlation. A correlation of .60 would then suggest that at least 36% of what contributes to variation in one group of numbers contributes to variation in the other.

---

## Regression

When we know the correlation between two sets of data we also know their means and standard deviations (or we could not have calculated the correlation), and this information is all that is needed to plot a regression line within an XY axis that allows us to predict one measure (number) from the other. The accuracy of our ability to predict one number from the other will increase as the correlation between the two sets of data becomes stronger. **Multiple Regression** is a statistical procedure designed to predict a single dependent variable using correlations obtained with a number of other variables. **Stepwise Multiple Regression** explains as much variance as possible by the best predictor, then moves to the second until its predictive power is exhausted, the third, and so forth.

---

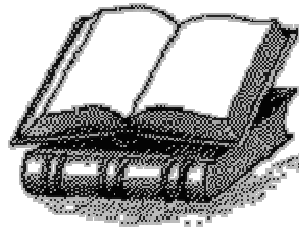
## Factor Analysis

In Factor Analysis you are looking to find a much smaller number of underlying **factors** or qualities that are the essence of many separate and distinct measurements you have obtained. You first need a correlation matrix of all the measures you are looking at for underlying structure (i.e. natural groupings of the different measures).

**\*There is a question or two on factor analysis. I cannot remember how they read...\***

Imagine a correlation matrix between five different variables: A, B, C, D, and E. These might, for example, be items on an experimental test. Assume next that A & B are highly correlated with each other, C & D highly correlated with each other (but not with A or B), and E not highly correlated with any of the other four variables. Factor Analysis would likely deduce that A & B are tapping into the same underlying factor or quality, C & D the same with a second factor or quality, and E reflecting still a third factor or quality. By this method a large number of items on a test might be reduced to four or five underlying **factors**. These might then be turned into **Scales**.

Usually in psychology, factor analysis is a way to group (sort together) intercorrelated measures to identify a smaller number of underlying **factors** present within the data being analyzed.



[Return to Areas to Review](#)

Copyright, University of South Florida.

***World Wide Web***  
***Review Guide for the CRC Examination:***  
***Research Topics***

---

**Most research in Rehabilitation Counseling is applied rather than theoretical, descriptive rather than experimental, and based on group rather than single subject designs.**

**Basic Versus Applied Research**

Basic research investigates the truth of existing theory or attempts to discover new knowledge that will further the development of theory. Applied research is designed around a specific problem, and the research questions, when answered, will help solve one or more aspects of the problem.



An example of basic research would be a study investigating the therapeutic value of the three critical attitudes and values postulated by Person-Centered Therapy. Another might look at whether any of the value changes postulated by Beatrice Wright are, in fact, associated with adjustment. Still another might study individuals with disabilities to see which of the stage models for adjustment seems to be the most relevant.

An example of descriptive research would be a study designed to see if individuals who are members of minority groups receive the same extent of rehabilitation services as individuals who are members of the majority group. The independent variable here would be group membership, and the dependent variable might be the total dollar expenditure on consumer rehabilitation programs.

### **Descriptive Versus Experimental Research**

Descriptive research is correlational in nature. It usually investigates whether one or more groups differ from one another on one or more dependent variables. In the simplest design, there would be only two groups and one dependent variable. *Stated another way, there would be one independent variable with two levels and one dependent variable.* An example would be investigating whether the IQs of men and women were significantly different or not. The independent variable here would be gender (with two levels or groups, men and women), and the dependent variable IQ scores for all the studied men and women.

Experimental research is different from descriptive research in that there is a control group. Rather than being correlational, it seeks to establish cause and effect. In the simplest design there would be one independent variable with two levels and one dependent variable with subjects randomly assigned to the two levels of the independent variable. An example would be a test of the effectiveness of a new AIDS medication where individuals with AIDS were randomly assigned to two levels of an independent variable that might be called "Treatment." One group would receive a placebo and the other the medication being studied. The dependent variable would be some measure of health or improvement. Such a study should be "double blind" to eliminate possible contamination by the experimenter or treatment staff expectations. If the group receiving the medication scored significantly higher on the dependent measure, a cause and effect relationship would be a reasonable conclusion.

### **Group versus Single Subject Research**

In group based research, subjects are sorted into groups they naturally fall into (as when, for example, demographic factors are being studied), or randomly into experimental groups defined by the researcher(s). There are one or more independent variables and one or more dependent variables, and in the simplest design there is one independent variable with two levels and one dependent variable. Group based statistical tests are then employed to look for possible differences.

In single subject research only one person is studied, although there may be cross validations of the procedures with other single subjects. A baseline on the behavior(s) of interest to the researcher(s) is established, and then an intervention is made that may have some potential to affect the behavior(s) under study. A post measurement of the behavior(s) is then made to see if there is any difference from the pre intervention baseline.

**\*Know the difference between a single case study and performing a longitudinal study. There is a question on the test about this, maybe more than one.\***

**\*Also know research design and which one involves the manipulation of variables, etc.\***

---

### **Explanations of Research Terms**

**The simplest way to explain the following terms is in relation to a group based research study that has two levels of one independent variable and one continuous (interval scale) dependent variable.**

**Dependent Variable:** The factor that is being measured and free to vary within the different levels of the independent variable being studied. It is usually scores obtained by subjects on some test or instrument.

**Independent Variable:** This is the variable that may or may not have some relationship to values taken by the dependent variable. This is what the study is trying to determine.

**Null Hypothesis:** The null hypothesis is simply the statement that there will be no significant difference in the values taken by the dependent variable for the different levels of the independent variable being studied.

**Type I Error:** An old term that means the null hypothesis was mistakenly taken to be false when it was in fact true (i.e., the researchers concluded there were significant differences when there were not).

**Type II Error:** An old term that means the null hypothesis was accepted as true when it was in fact false (i.e., the researchers concluded there were no significant effects when there actually were).

**Significance Level:** A probability value set for concluding there are in fact differences in the studied data not due to chance. A significance level of  $p < .05$  means the data differences would occur by chance, given the sample size, only 1 time in 20. A significance level of  $p < .01$  means that only 1 time in 100, given the sample size, would the identified differences result simply from chance alone.

**Sample:** The group of subjects being studied. The sample should be representative of some larger population (that it was drawn from) so that results obtained for the sample

may be generalized to that population. To the extent that the sample differs, from the larger population it claims to represent, the generalizability of findings are reduced. This is a common *limitation* of research studies, and in some cases very problematic.

**Population:** The larger group the study is hoping to learn more about. Because populations are usually too large to study completely (i.e. measure every member), a sample is taken and the results for the sample are generalized to it.

**\*There is a question on sample/population so review this material. I don't remember it being a hard question, very general.\***

**Generalizability:** The extent to which results found for the sample can be extrapolated and applied to the population it claims to represent. A sample should be well representative of a population if results are to be considered applicable to that population.

**\*Understand extrapolated scores wherein basically by plotting a certain number of points (data) or by having certain numbers correlate you can figure out the future "pattern" of data without actually having those data scores.... (i.e. line increasing on a graph = extrapolation)**

---

## ***World Wide Web Review Guide for the CRC Examination: Validity and Reliability***

---

Tests are valid when they measure what they claim to measure, and reliable when they measure consistently. Because we measure qualities that are relatively stable (e.g., intelligence, personality characteristics) a valid measure of a construct will also be a reliable one. But a reliable measurement is not necessarily valid.

In a situation where a reliable measure is not valid, the test is consistently measuring something other than what it claims to measure. A test claiming to measure spatial perception could actually be measuring more form perception than spatial perception. Client scores on the test would be quite consistent from one administration to the next, but their scores would too strongly reflect their abilities at form perception, and the test would not be a valid measure of what it claims to measure -- spatial perception. If we needed a measure of spatial perception for vocational planning with a client, and we used their score on such a test, it would not be valid.

Another concept to understand in validity and reliability is that we can use a valid and reliable test in totally invalid ways. Here the problem is not the design or psychometric properties of the test, but rather how we ourselves are using the instrument. A valid test of intelligence, for example, could be misused by a counselor if he or she concluded that an I.Q. score of 80 is too low for successful completion of some technical training program. The more important factor may be reading level. If the training text is written at an 8th grade level, a client with an I.Q. of 80 and grade reading level of 10.3 is likely to do better than a client with an I.Q. of 90 and 5.5 reading level.

Are there any situations where a valid test would not be a reliable one? Only if what we are measuring is changing from one administration to the next. A test of mood, for example, might be valid but have low test-retest reliability. The result is valid at the moment obtained, but mood can change again a moment later. From a pragmatic perspective, there is not much point in measuring what is highly unstable or constantly changing. We are interested in measuring more enduring client qualities and characteristics that will help us to predict what is likely to happen in the future.

So far we have discussed validity and reliability in rather general and pragmatic ways. There is more to both concepts, and in preparing for the CRC exam you should definitely know the different types of validity and reliability.

## Types of Validity

**Face Validity:** Many say this is not a true type of validity for it cannot be measured. Face validity simply means that the test looks reasonable to a lay person in relation to what it claims to measure. When you take the CRC Exam you expect to see questions dealing with the practice of rehabilitation counseling. If you see a question such as, "Who was the 30th President of the United States?" you might correctly wonder what that has to do with the practice of your profession. What you are experiencing with the test is a problem with its face validity. **\*There were questions on validity, of course. It would give an example and you answer face validity, content validity et al.\***

**Content Validity:** This is where a test adequately samples from the entire domain it intends to measure. If it does so, the test may be said to have good content validity. On the CRC Examination you can expect to see questions dealing with many different aspects of rehabilitation and counseling. If there were no questions on the examination dealing with validity and reliability, or far too many compared with other areas, the test would have a problem with content validity. The test would be failing to assess an area of knowledge important in the practice of the profession, or placing far too much emphasis on it, invariably at the expense of measuring other areas.

The content validity of an instrument can be studied empirically in a number of different ways. Studies of internal consistency, item analysis, and expert ratings are commonly employed methods. But content validity is never an end in itself. When a test has content validity, other and more important types of validity tend to follow.

**Criterion or Predictive Validity:** This is when a test score is correlated with some event beyond itself. This is the type of validity counselors are most interested in for they need to predict what will happen if certain courses of action are followed. Will the client be able to successfully complete a certain job training program? Scores on tests may help the counselor answer the question. Is the client presently depressed, and if so how severe is the depression? Test scores can provide quantifiable information not available any other way.

When two events are correlated one can be used to predict the other. The client's test score is one event, and the other event is the criterion or what we are trying to predict. We measure validity with correlation coefficients, and by far the most widely used correlation is the Pearson  $r$ . Correlations can range from -1.0 to +1.0, and a correlation of 0.0 means there is no relationship between the two events. Correlations from -.30 to +.30 are generally considered to be insignificant.

To be useful in prediction, a test should correlate at .40 or higher with the criterion. The higher the correlation the better one event predicts the other, and .60 is a good correlation for a validity coefficient. What does a correlation of .60 mean? It simply reflects how much variance the two events share with one another. A conservative estimate of the shared variance can be obtained by squaring the correlation coefficient. A .60 correlation means that 36% of what contributes to one observation also contributes to the other. Sometimes the term **concurrent** validity is used to describe a particular type of criterion or predictive validity. When two tests claim to measure the same thing, they should have a high concurrent validity coefficient. If two tests, for example, both claim to measure intelligence, you would expect relative performance on one to be similar to relative performance on the other. If that situation does not exist -- then the tests are not measuring the same thing.

**Construct Validity:** This exists when a test has wide acceptance as a means for measuring a construct. The published literature on the construct frequently uses the test to measure it, and after a time our understanding of the construct starts to merge with the instrument. As an example of this, if you ask some psychologists what intelligence is, they will tell you it is what the WAIS-R measures. They say that because all the published research on intelligence uses the WAIS-R or an instrument that has established concurrent validity with it, and our very understanding of the construct has merged, to a significant degree, with what the WAIS-R measures.

## Types of Reliability

**Reliability refers to the consistency and stability of measurements. It is essentially the test predicting itself from one administration to the next. A test that cannot predict itself will be unable to predict anything else.** If, for example, a subject earns an IQ score of 105 ... when tested again a few days later the second IQ score should be similar. If it is not, the reliability of the test might be questioned.

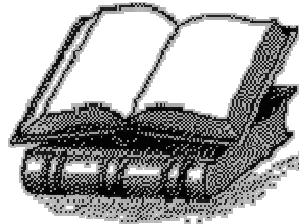
**\*Know definition of reliability highlighted above.\***

Like validity, reliability is usually measured by Pearson product-moment correlations. Reliability coefficients tend to be higher than validity coefficients because it is easier for a test to predict itself than a quality or occurrence beyond itself. Reliability coefficients are usually in the .80 range or higher.

**Test-Retest Reliability:** This is when subjects produce similar scores on a subsequent administration of the test to scores they produced on the first administration of the test.

**Split-Half Reliability:** One of the ways to study and estimate the reliability of an instrument without going through the work of two administrations (where a test-retest effect may influence second scores) is the split-half procedure. It is usually done by correlating subject scores on the odd items of the test with scores for the even items of the test. The correlation obtained is the split-half reliability. The reliability of the larger instrument can be estimated using a simple Spearman-Brown formula to correct the split-half correlation. This formula raises the reliability estimate somewhat because longer tests are generally more reliable than shorter ones.

**Parallel Form Reliability:** In order to avoid test-retest effects it is often useful to have two or more forms or versions of the same test. Form A, for example, can be given at the start of a program and Form B at the end without duplicating the test questions. An example of this would be taking 200 test items designed to measure a domain and building two 100 item parallel test forms from them.



[Return to Areas to Review](#)

Copyright, University of South Florida.

Tests are frequently classified as falling into one of the following five areas:

Intelligence Tests  
Aptitude Tests  
Achievement Tests  
Personality Tests  
Interest Inventories

# Intelligence Tests

Many definitions have been offered for the construct of intelligence. The *ability to solve problems and to learn and retain new information* is probably as good a definition as any. Intelligence is a performance variable. Tests do not measure capacity or how much intelligence someone has, but rather how they perform.

## \*\*\*\*\* WAIS-IV \*\*\*\*\*

The **Wechsler Adult Intelligence Scale-IV (WAIS-IV)** was released late in 2008 and is a very significant departure from the WAIS-III which was released in 1997. The test is the most widely accepted measure of the construct of intelligence in adults. This instrument has such strong construct validity that when asked what intelligence is many researchers will say, "it is what is measured by the **WAIS-IV**."

The **WAIS-IV** reports a Full Scale IQ (FSIQ) which is composed of a Verbal Comprehension Scale (VCS), Working Memory Scale (WMS), Perceptual Reasoning Scale (PRS), and Processing Speed Scale (PSS). It can be used with individuals from 16 through 90 years of age. Scores are normed to different age groups so individuals are always being compared with their age group peers.

There are different ways of describing IQ ranges, but the following is a fairly commonly used method:

### IQ Ranges

130+	Very Superior
120-129	Superior
110-119	High Average
90-109	Average
80-89	Low Average
70-79	Borderline Intellectual Functioning
69-	Mentally Challenged

There are both core and supplemental subtests on the WAIS-IV as follows:

### Verbal Comprehension Scale

Information

Similarities

Vocabulary

Comprehension (supplemental scale)

**Working Memory Scale**

Digit Span

Arithmetic

Letter-Number Sequencing (supplemental scale, ages 16-89 only)

**Perceptual Reasoning Scale**

Block Design

Matrix Reasoning

Visual Puzzles

Picture Completion (supplemental scale)

Figure Weights (supplemental scale, ages 16-89 only)

**Processing Speed Scale**

Symbol Search

Coding

Cancellation (supplemental scale, ages 16-89 only)

**Areas Measured by WAIS-IV Subtests****\*\*\*\*\* Other IQ Tests \*\*\*\*\***

Any other test claiming to measure intelligence must establish concurrent validity with the **WAIS-IV**. This is because the **WAIS-IV** is the instrument most widely recognized as having validity for the construct of intelligence. Some other tests of intelligence are the **Slosson Intelligence Test-R**, **Revised Beta Examination (Beta-2)**, and **Haptic Intelligence Scale for the Adult Blind**. The G aptitude on the **GATB** is also a general measure of intellectual ability.

---

## Aptitude and Achievement Tests

Intelligence may be thought of as a global aptitude. Tests of aptitude are designed to measure more specific or focused areas that predict the likelihood to learn and master knowledge or skills needed for success in some vocation. Their purpose is to predict how successful an individual will likely be at learning different aspects of what a formal training program, or some other method, will try to teach them. They differ from achievement test which measure how much was actually learned -- after the training was received.

**\*Know the different kinds of tests and be familiar with those. There is a question about aptitude tests – basically know that they are designed to measure future achievement/predict performance.**



An aptitude test that many rehabilitation counselors take is the **Graduate Record Examination (GRE)**. This test is designed to predict how much students will learn and how easily they will master materials presented to them in a graduate program. Higher scorers should learn more easily and with less effort, and for the same effort as invested by lower scorers, come away with more knowledge and skills. The examinations taken in their courses are achievement tests, as is the examination many readers are reviewing for -- the **CRC Examination**.

The aptitude test battery that is probably the most widely used by rehabilitation counselors is the **General Aptitude Test Battery (GATB)**. **GATB** scores have a mean of 100 and standard deviation of 20. This instrument was developed by the U. S. Department of Labor, and it is used by state employment offices and in many rehabilitation sites.

#### **Aptitudes measured by the GATB:**

- General Learning Ability (G)
- Verbal Ability (V)
- Numerical Ability (N)
- Spatial Perception (S)
- Form Perception (P)
- Clerical Perception (Q)
- Motor Coordination (K)
- Finger Dexterity (F)
- Manual Dexterity (M)

#### **GATB Aptitude Definitions**

The achievement testing most relevant in rehabilitation counseling is measuring the general educational development (GED) rather than acquired vocational skills of a client. One of the most widely used measures of GED is the **Wide Range Achievement Test-Revised (WRAT-R)**. This test measures reading, spelling and basic arithmetic achievement which may be critically important in a training program. If a training program, for example, is using a text written at an 8th grade level, the rehabilitation counselor needs to know if his client has achieved that level of reading mastery.

---

## **Personality Tests**

Personality tests differ from intelligence, aptitude and achievement tests in that there are no right or wrong answers. They are generally untimed, and what is most important is an honest self-report. Most personality tests, such as the **MMPI-2**, are psychometric instruments with standardized administration, scoring and norms. Some instruments, such as the **Rorschach** and **Thematic Apperception Test**, are impressionistic measures of

personality. While there are systems for scoring responses given on these instruments, they are frequently used in an impressionistic rather than psychometric way.

The most widely used test for diagnosing psychopathology is the **Minnesota Multiphasic Personality Inventory-2**. This instrument has four validity scales (V, L, F & K) and ten basic clinical scales. All scores are reported as T-scores where the mean is 50 and standard deviation 10. Many additional scales have been developed using the 567 true-false items on the **MMPI-2**, and these are commercially available as well. The test can be hand scored or scored and interpreted by computer.

The basic use of the **MMPI-2** is to diagnose psychopathology. Reports describe likely personality characteristics and interpersonal/relational difficulties that may result. The test identifies psychopathology by comparing subject responses on the true-false items with responses of subjects with known types of psychopathology. Scales are constructed on a statistical basis without regard to specific item content.

#### **Basic Clinical Scales of theMMPI-2:**

- 1 - Hypochondriasis (Hs)
- 2 - Depression (D)
- 3 - Conversion Hysteria (Hy)
- 4 - Psychopathic Deviate (Pd)
- 5 - Masculinity-Femininity (MF)
- 6 - Paranoia (Pa)
- 7 - Psychasthenia (Pt)
- 8 - Schizophrenia (Sc)
- 9 - Hypomania (Ma)
- 10 - Social Introversion (Si)

There are many personality tests on the market such as the **Sixteen Personality Factors Questionnaire, California Psychological Inventory, Myers-Briggs Type Indicator, Personality Assessment Inventory**, etc. Each has a somewhat different focus and administering a battery of tests usually produces the best picture of an individual's personality dynamics. Tests of personality are normally administered and interpreted by a clinical psychologist, and the rehabilitation counselor uses the information in rehabilitation planning.

---

## **Interest Inventories**

Rehabilitation counselors normally distinguish three types of vocational interests:

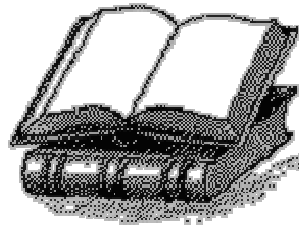
- (1) Expressed Interests -- What a client verbally states he or she would like to do.
- (2) Manifest Interests -- Activities the client actually engages in and enjoys.
- (3) Tested Interests -- Results obtained from interest inventories.

As with personality tests, there are no right or wrong answers to interest inventories. They generally ask subjects what they like and dislike, and relate these preferences to the world of work. Some interest inventories are more oriented toward college level occupations, others to trade and technical occupations, and accordingly the inventory selected needs to be appropriate for the client.

Interest inventories vary in complexity from very sophisticated instruments such as the **Strong Vocational Interest Blank for Men and Women (SCII)** that is only scorable by computer, and usually interpreted by the computer as well, to instruments that can be self-administered, scored and interpreted such as the **Self-Directed Search (SDS)**.

Both of the above instruments are designed around John Holland's well known work environment/personality model. The six occupational environments identified by Holland and used on these instruments are: Social, Enterprising, Conventional, Realistic, Investigative, and Artistic. Holland believed that each work environment reflected a somewhat different orientation toward life in values, interests, preferred activities, and interpersonal relational styles. Individuals working in environments compatible with their personality style were more likely to be satisfied with their work. This model will be discussed further in the Review of Vocational Development Theories section.

There are many other interest inventories on the market, and some are designed for specific populations such as poor readers. Other widely used interest inventories include the **Gordon Occupational Checklist**, **Wide Range Interest-Opinion Test (WRIOT)**, **Kuder Occupational Interest Inventory**, and **Geist Picture Interest Inventory**.



[Return to Areas to Review](#)

Copyright, University of South Florida.